CLAIMS:

1. A motor system comprising:

a stator, the stator having at least a first and a second multiphase winding, the first and second windings being electrically isolated from one another and non-interlaced with one another;

a rotor mounted for movement relative to the stator, the rotor having at least one permanent magnet mounted thereon;

a drive circuit including a power source and a commutation circuit, the drive circuit electrically connected to at least the first winding to, in use, provide electricity to the first winding to rotationally drive the rotor about the axis; and

a rotor position recognition circuit connected to the second winding, the rotor position recognition circuit adapted to, in use, determine rotor position based on an electricity induced in the second winding when the rotor passes the second winding, the rotor position recognition circuit connected to drive circuit for providing feedback information to the drive circuit regarding said determined rotor position.

2. The motor system of claim 1 wherein the first and second windings have at least three phases.

3. The motor system of claim 1 wherein the first and second windings are spaced apart from one another.

4. The motor system of claim 1 wherein the first and second windings occupy non-overlapping sector segments of the stator.

5. An electric motor system comprising:

a rotor mounted for rotation about an axis, the rotor having at least one permanent magnet mounted thereon;

a generally cylindrical stator, the stator having at least a first and second sector relative to the rotor rotation axis, the first and second sectors being distinct from one another, the stator having at least two multiphase winding sets, wherein the at least two winding sets are confined to a different one of said sectors;

a motor drive connected to a power source and one of the windings sets to thereby selectively energized the winding set to electrically drive rotation of the rotor; and

a rotor position decoder connected to the other winding set to thereby acquire signals from the other winding set for providing rotor position information to the motor drive.

6. The motor system of claim 5 wherein said other winding set is not connected to the motor drive.

7. A motor system comprising:

a permanent magnet rotor;

stator having at least a first multiphase winding set and a second multiphase winding set, the first and second winding sets substantially electrically and magnetically isolated from one another, the first set positioned in the stator such that, in use, magnetism induced by electricity flowing therethrough causes the rotor to rotate, the second positioned in the stator such that, in use, the rotating rotor induces electricity to flow therethrough;

a first control system adapted to provide electricity to the first winding set to continuously drive rotation of the rotor; and

a second control system adapted to receive electricity induced in the second windings and provide rotor position information to the first control system.

8. The motor system of claim 7 further comprising:

a third control system adapted to provide electricity to the second winding set to continuously drive rotation of the rotor;

a fourth control system adapted to receive electricity induced in the first windings and provide rotor position information to the third control system.

9. A motor system comprising:

a permanent magnet rotor;

stator having at least a first multiphase winding set and a second multiphase winding set, the first and

second winding sets substantially electrically and magnetically isolated from one another;

a motor drive connected to a power source and the first winding set to thereby selectively energized the first winding set to electrically drive rotation of the rotor; and

a rotor position decoder connected between the second winding set and the motor drive to thereby acquire signals from the second winding set for providing rotor position information to the motor drive.

10. The motor system of claim 9 wherein the first and second windings are disposed in distinct sectors of the stator.

11. The motor system of claim 9 wherein at least a portion of the first and second windings are non-overlapping relative to each other in the stator.

12. The motor system of claim 9 wherein the first and second windings sets are arranged serially with one another relative to a permanent magnet rotation path of the rotor.

13. The motor system of claim 9 wherein each winding set is a 3-phase winding set.

14. The motor system of claim 9 further comprising a commutation apparatus connected to the first winding set and a rotor position sensing apparatus connected to the second winding set, wherein the rotor position

sensing apparatus is connected to commutation apparatus for providing rotor position feedback information to the commutation apparatus.

15. A brushless motor system comprising:

at least a first magnetic circuit including at least a first permanent magnet rotor mounted for rotation on a shaft, a first stator adjacent the first rotor, and at least one multiphase winding set associated with the first stator;

at least a second magnetic circuit including at least a second permanent magnet rotor mounted for rotation on the shaft, a second stator adjacent the second rotor, and at least one multiphase winding set associated with the second stator, the second stator winding set being electrically isolated from the first stator winding set, the second magnetic circuit being isolated from the first magnetic circuit;

a commutation apparatus adapted to, in use, provide commutation signals to the first stator winding set to cause the first stator winding set to drive rotation of the first rotor; and

a rotor position sensing apparatus adapted to, in use, receive input from the second stator winding set and provide output rotor position information to the commutation apparatus.

16. The motor system of claim 15 wherein the first and second rotors are the same rotor.

17. The motor system of claim 16 wherein the first and second stators are portions of the same stator body.

18. The motor system of claim 16 wherein the first and second stators are distinct sectors of the same stator body.

19. The motor system of claim 18 wherein only said two magnetic circuits and said two multiphase winding sets are provided, and wherein the first and second stators each occupy a different half of the stator body.

20. A method of operating a motor system, the system having at least a motor, a commutation apparatus, a rotor position detecting apparatus and a source of electricity, the motor having at least a rotor and a stator, the method comprising the steps of:

providing at least two multiphase winding sets in the stator;

electrically isolating the at least two multiphase winding sets from one another;

providing electricity from the commutation apparatus to at least a first winding set of said at least two winding sets to thereby continuously drive rotor rotation with said at least first winding set;

leaving at least a second winding set of said at least two winding sets continuously unenergized such that said rotor rotation induces electricity in the second winding set;

providing said induced electricity to the rotor position detecting apparatus to produce rotor position information; and

providing said rotor position information to the commutation apparatus for at least one of verifying and adjusting a commutation process conducted by the commutation apparatus.

21. The method of claim 20 further comprising the step of magnetically isolating the at least two multiphase winding sets from one another.

22. A method of controlling a motor comprising the steps of:

providing commutation signals to at least a first multiphase winding set in a stator to rotate a permanent magnet rotor;

receiving rotor-induced electricity in at least a second multiphase winding set, the second multiphase winding set magnetically isolated from the first set;

using said received electricity to determine information on a position of the rotor; and

using said position information as an input in controlling the motor.

23. A method of operating a motor, the motor having a permanent magnet rotor and a stator, the stator having at least a first multiphase winding set and a second multiphase winding set, the first and second winding

sets substantially electrically and magnetically isolated from one another, the method comprising the steps of:

providing commutation signals to the first winding set to rotate a permanent magnet rotor;

providing no input electricity to the second winding set;

receiving rotor-induced electricity from second multiphase winding set;

determining rotor position information from the rotor-induced electricity; and

using said information to adjust the commutation signals.